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**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

DEC 20 1996

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

In the Matter of

**Amendment of Part 25 of the Commission's
Rules to Establish Rules and Policies
Pertaining to the Second Processing Round
of the Non-Voice, Non-Geostationary
Mobile Satellite Service**

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IB Docket No. 96-220

**COMMENTS OF GE-STARSYS GLOBAL POSITIONING INC.
AND GE AMERICAN COMMUNICATIONS, INC.**

GE-STARSYS GLOBAL POSITIONING INC.

and

GE AMERICAN COMMUNICATIONS, INC.

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SUMMARY

GE-Starsys Global Positioning Inc. ("Starsys") and GE American Communications, Inc. ("Americom") appreciate the Commission's efforts to complete the second processing round for the Non-Voice, Non-Geostationary Mobile Satellite Service. As discussed in our comments, Americom will be withdrawing its own application. However, Starsys maintains its request for non-exclusionary use of 50 kHz of spectrum in the second round, and submits that the Commission should not automatically preclude first round licensees from participation in that round.

A retroactive dismissal of Starsys's application would be arbitrary and capricious. The rationale for the Commission's proposal to exclude first round licensees is to maximize the total number of Little LEO licensees, yet Starsys's non-exclusionary use of spectrum would not preclude the licensing of additional applicants. Grant of the Starsys application also is justified by spectrum developments since its initial application was filed. Moreover, an economic analysis using the Commission's proposed structure-conduct-performance model demonstrates that rules disqualifying Starsys would not be justified here. Starsys's non-exclusionary use of the minor additional spectrum would be pro-competitive. It would strengthen an existing competitor and would not preclude entry by others in a marketplace characterized by diverse sources of supply and the availability of other services that can be substituted for those offered by Little LEO licensees.

Starsys also submits that, in recognition of the efforts of second round applicants, including itself, to obtain additional spectrum at WRC-95 and WRC-97, those parties should be given priority for additional spectrum allocated out of those

conferences. The Commission should defer decisions with regard to policies that would apply to spectrum allocated after WRC-97. It is premature to draw conclusions in this area until the Commission has more information regarding what spectrum will be available, as well as future coordination developments and market activities.

As the Commission considers how it might assign additional spectrum in this round, it should keep in mind the impact that first round licensees already have felt due to coordination and other developments since the Negotiated Rulemaking. Starsys does not take a general position here on the sharing plans in the Notice. However, we do discuss how those plans would have to be implemented to avoid unreasonable impact on our system.

Whatever action the Commission takes here, it should avoid the use of auctions to resolve the second round. Auctions for satellite services in the United States could lead to sequential auctions in other countries, creating substantial uncertainty about the cost and ability of a Little LEO system to provide service. They would also set a bad precedent that could adversely affect development of other international satellite services.

Starsys supports the Commission's proposal to require Little LEO applicants to meet the more stringent financial qualifications standard generally applicable to other satellite systems. However, we suggest that this new standard should be applied prospectively, and that second round applicants be judged under the current standard.

Finally, the Commission should not require NVNG terminals to be equipped with position determination capability. Such a requirement would unduly increase costs and marginally increase interference to other services sharing the band. On another point, Starsys supports the Notice's proposal to limit a licensee's ability to enter into exclusive arrangements with other countries.

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Mobile Satellite Service)	

**COMMENTS OF GE-STARSYS GLOBAL POSITIONING INC.
AND GE AMERICAN COMMUNICATIONS, INC.**

GE-Starsys Global Positioning Inc. ("Starsys") and GE American Communications, Inc. ("Americom") hereby submit their comments in response to the Commission's Notice of Proposed Rule Making in the above-referenced proceeding, FCC 96-426 ("Notice"). GE Americom has been an applicant in the second processing round for the Non-Voice, Non-Geostationary ("NVNG MSS") Mobile Satellite Service, and is the 80% shareholder of Starsys.

INTRODUCTION

Starsys and Americom appreciate the Commission's efforts to develop a resolution to the second NVNG processing round. For its part, based on these and other considerations, Americom will be withdrawing its application. Appropriate filings will be made in the near future.

However, Starsys has a strong and continuing interest in this rulemaking, both as an applicant and as a long-term participant in the NVNG

industry. We continue to request 50 kHz in the 149.9-150.05 MHz band for feeder links. And the rules adopted here will affect all NVNG systems as they go forward in the future.

We are concerned that certain of the proposals in the Notice are inconsistent with sound legal principles, technical coordination limitations, or the public interest in development of robust and efficient NVNG systems. We realize the dilemma the Commission faces due to the limited spectrum available for NVNG service at this time. The current shortage affects all second round applicants, including those who hold authorizations today. Starsys is actively participating in efforts to obtain allocations for additional spectrum at WRC-97. We also are considering proposals that might lead to a settlement among the second round applicants as a group. The same is true for other second round applicants.

As the Commission goes forward, it should pursue policies that address those constraints even as it looks for opportunities to license additional systems. More specifically, the Commission should adopt rules in this proceeding that reflect the following principles:

- Rules should not infringe the ability of first round systems to use the limited spectrum authorized to them to date.
- Rules should recognize the equitable claim of second round applicants on NVNG spectrum allocated at WRC-95 and WRC-97.
- Second round processing should be flexible enough to accommodate both legitimate requirements of first round applicants for additional spectrum, and new entry from other applicants ready to build, as additional spectrum is now available or becomes available through the next WRC.

- Auctions must be avoided due to their international consequences for NVNG deployment generally.

These principles will harmonize the varying needs of the current applicants, and best promote the public interest in the development of NVNG service. As discussed below, however, a number of the proposals in the Notice are inconsistent with these principles and should not be adopted. We encourage continued dialog among the applicants, and between the applicants and the Commission, on the issue of licensing both pre- and post-WRC-97.

I. SUMMARY DISMISSAL OF STARSYS'S SECOND ROUND APPLICATION FOR NON-EXCLUSIONARY SPECTRUM USE WOULD BE ARBITRARY AND CAPRICIOUS.

Starsys strongly submits that it has a legal right to participate in the second round. The Notice does not present reasonable grounds for retroactively disqualifying Starsys's modest -- non-exclusionary -- spectrum request left over from the first round process. In the circumstances here, dismissal of Starsys would constitute arbitrary and capricious decisionmaking. Grant of Starsys's application will not preclude the licensing of additional applicants for primary use of the same spectrum. Starsys has a legitimate requirement for the spectrum. Moreover, as discussed below, the economic analytical framework proposed in the Notice supports permitting Starsys to participate. For all of these reasons, the Commission should not adopt rules that would result in dismissal of Starsys's application here.

A. NVNG Developments Reinforce Starsys's Requirement for Use of the Channel.

The proposal in the Notice to summarily exclude Starsys from the second round, just because it received a license in the first, ignores the specific content of Starsys's application, which involves non-exclusionary use of a small band of spectrum. Indeed, to adopt this approach the Commission would have to shut its eyes to information that has been before it for almost three years. Such an approach cannot be considered reasoned decisionmaking.

As the Commission is well aware, Starsys seeks 50 kHz in the 149.9-150.05 MHz band solely for feeder links in the uplink direction. Allocation of this spectrum would not preclude other users -- including potential new licensees -- from using the same spectrum, considering geographical separation, from only two ground stations in the United States.

Furthermore, the Commission should take into consideration that Starsys's requirement for the spectrum has grown since the filing of its first round application due to related NVNG spectrum developments that were not evident at that time. Starsys submitted its amendment to its first round application on April 25, 1994, before any of the first round licenses were granted, responding in part to the Commission's implicit invitation in the Allocation Order. 1/ The International

1/ The Commission stated: "STARSYS points out that the allocation of this additional spectrum will allow multiple LEO systems to operate without causing interference to other systems or to each other. We therefore are allocating these bands to LEOs on a primary basis conditioned upon the discontinuance of the

[Footnote continued]

Bureau decided to treat Starsys's amendment as a newly filed "major amendment" and deferred consideration of it to the second round. 2/

In addition, after Starsys submitted its initial application the Commission adopted rules that dramatically affected the operation of spread-spectrum systems such as Starsys's by reducing the power, duration, and duty cycle of the mobile terminals in the uplink band well beyond that anticipated at the time of the Negotiated Rulemaking. 3/ The effect of these very low power levels -- approximately two watts per terminal -- causes smaller than desired link margin on the satellite downlink channel to the ground station. The duty cycle imposed on spread-spectrum systems is one half of that allowed FDMA systems in the same band.

[Footnote continued]

TRANSIT-SAT radionavigation system. Until the TRANSIT-SAT system is discontinued, we also will permit the 149.9-150.05 MHz band to be used for MSS 'gateways' (connections with other communications systems such as the Public Switched Telephone Network) on a secondary basis." Amendment Of Section 2.106 Of The Commission's Rules To Allocate Spectrum To The Fixed-Satellite Service And The Mobile-Satellite Service For Low-Earth Orbit Satellites, 8 FCC Rcd 1812, 1816 (1993).

2/ Application of Starsys Global Positioning, Inc. for Authority to Construct a Satellite System in the Non-Voice, Non-Geostationary Mobile Satellite Service, 11 FCC Rcd 1237, paras. 17-21 (Int'l Bur. 1995).

3/ Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Non-Voice, Non-Geostationary Mobile Satellite Service, 8 FCC Rcd 8450 (1993).

Furthermore, the need to coordinate with NOAA in the 137-138 MHz band has limited the output power at the satellites to levels that allow only a minimum link margin to the Starsys system. This low link margin for Starsys now requires that FDMA NVNG MSS systems operating in channels close to the Starsys 137.5 MHz centerline frequency must reduce their power at the satellite significantly when operating in the main beam of a Starsys ground station antenna in order not to cause harmful interference to the Starsys satellite signal. Moreover, as a result of formal negotiations with France, Starsys will already have to share with another worldwide spread-spectrum system in the same band. Similarly, the need to share with Orbcomm in the 137-138 MHz band was known at the time of the Negotiated Rulemaking, but was based on the then current application by Orbcomm for 20 satellites. When Orbcomm later changed its constellation to 36 satellites, the occasions of interference from the Orbcomm satellites into the Starsys ground station antennas increased significantly. Thus, much more interference to the Starsys downlink signal at 137-138 MHz is occurring than was anticipated when the Negotiated Rulemaking was conducted in 1992. 4/

4/ At the time of the Negotiated Rulemaking it was believed that the Orbcomm channels in the 137-138 MHz band could be accommodated at the outside edges of the co-primary mobile satellite frequency allocation where those channels would impose minimum interference to the Starsys spread-spectrum signal centered at 137.5 MHz. Subsequent retention of NOAA channels in the Little LEO co-primary area required moving some Orbcomm channels closer to the Starsys channel centerline, thereby causing more interference than anticipated. Even later international coordination by Orbcomm with the Russian METEOR system caused additional displacement of Orbcomm channels closer to our centerlink. In addition,

[Footnote continued]

The net effect of all these developments is to increase the importance to Starsys of the spectrum requested in its application. Without a 50 kHz channel in the 149.9-150.05 MHz band for the Starsys earth-to-space feeder link, Starsys would have to use 50 kHz of the mobile terminal uplink bandwidth in the 148.0-149.9 MHz band. This would further weaken the already low Starsys space to earth downlink margin by approximately 10%.

This point relates to another. Starsys's application relates directly to the performance of its service as proposed in its first round application. It was included in that application, and deferred by the Commission to this round for procedural reasons. Thus, Starsys's request is very different from, for example, Orbcomm's modification request for 12 additional satellites and 90 kHz additional spectrum in the 137-138 MHz band. In contrast, allocating 50 kHz to Starsys in the 149.9-150.05 MHz band would not detract from available spectrum to unlicensed applicants due to the fact that Starsys's use is non-exclusionary.

[Footnote continued]

the movement of two additional Orbcomm channels in this NPRM to the NOAA channels, one directly on top of, and one very close to our centerline frequency would cause either severe increases in harmful interference to the GE Starsys signal when operating in the same area simultaneously, or require major power reductions by the Orbcomm satellites when transmitting on these channels in the main beam of a Starsys ground station antenna.

B. The Public Interest, Analyzed Using the Economic Framework Proposed in the Notice, Supports Allowing Starsys to Participate in the Second Round

The economic paradigm proposed in the Notice -- the structure-conduct-performance ("SCP") model, does not support the proposal to exclude Starsys from the second licensing round. Indeed, that economic approach supports allowing Starsys to participate in the second round and to be authorized to use the spectrum it has requested.

Here too, the Commission's economic analysis must begin with the critical fact that Starsys's application in the second round does not preclude the grant of spectrum to additional licensees, which could share the same spectrum Starsys is seeking. 5/ Thus, the Notice poses a false choice; there is no need to prove, for example, that "consumer benefits from other factors, such as economies of scale and scope outweigh the benefits of increasing competition." 6/ Granting Starsys's application does not require reducing the total number of entities that can

5/ Additionally, a Preliminary Draft New Recommendation ITU-R[80XP], "Methodology of Estimating Feasibility of Sharing Between MSS Systems and Existing RNSS Systems in the Frequency Bands 149.9-150.05 MHz and 399.9-400.05 MHz" approved by ITU-R NP80 in NN 1996 identified that MSS earth stations would have to avoid interference to Radio Navigation Systems by (a) maintaining coordination distances of 177 to 660 km from navigable waterways or (b) using MES-controlled frequency avoidance techniques to avoid RNSS transmissions, and/or (c) limiting elevation angles of MSS gateway earth stations when azimuth directed towards navigable waterways. These sharing criteria make NVNG MSS use of the 149.9-150.05 MHz band significantly less useable than other bands.

6/ Notice at para. 20.

receive licenses, or the amount of spectrum available for such licensees. In fact, we propose making available an additional 50 KHz in the 149.9 - 150.05 MHz band for the same reason.

Even assuming for the sake of argument, however, that permitting first round licensees to participate in the second round might preclude entry by other NVNG MSS competitors, the Notice's tentative conclusions are not supported by economic analysis. It is axiomatic that a policy that merely promotes entry by a greater number of competitors is not necessarily pro-competitive. The Communications Act, like "the antitrust laws, . . . [was] enacted for 'the protection of competition, not competitors.'" 7/ The Notice's simplistic assumption that a greater number of entities offering NVNG MSS service would represent a more competitive marketplace is not supported by economic analysis, especially where increasing the number of entities requires smaller allocation of spectrum to each operator.

7/ Brunswick Corp. v. Pueblo Bowl-O-Mat, 429 U.S. 477, 488 (1977) (quoting Brown Shoe Co. v. United States, 370 U.S. 294, 320 (1962)). See also Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, CC Docket Nos. 96-98 and 95-185, First Report and Order, FCC 96-325, paras. 618, 705 (released Aug. 8, 1996); Id., Separate Statement of Commissioner Susan Ness at 2 ("Our duty is to establish rules that are pro-competition, not pro-competitor."); Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, CC Docket No. 96-98, Notice of Proposed Rulemaking, 11 FCC Rcd 14171, para. 12 (released Apr. 19, 1996) (purpose of "1996 Act is not to ensure that entry shall take place irrespective of costs, but . . . to allow entry to take place where it can occur efficiently. This entry policy is . . . pro-competition, not pro-competitor.").

The Notice devotes substantial space to a discussion of the SCP economic model. However, that model, applied as the Commission has done in the past, clearly demonstrates that Little LEO operators will function in a competitive marketplace, and that there is no need to preclude second round participation by first round licensees. To date, the Commission has used the SCP model only in the context of state petitions for authority, under Section 332(c)(3) of the Act, to retain regulatory authority over commercial mobile radio services ("CMRS"). The Commission has denied every one of these petitions, finding that the CMRS marketplace in each state is sufficiently competitive that there is no need for regulation of rates, terms, or conditions. The Commission found that the cellular duopoly then existing (before the entry of broadband PCS) was not enough to support a petition in the absence of a concrete showing of anticompetitive activity, and that the impending entry of broadband PCS providers demonstrated the vibrancy of competition in those markets.

By comparison, the marketplace in which NVNG MSS operators compete in 1996-1997 is even more competitive than the market for two-way mobile voice telephony services was in 1995. Most importantly, there are at least as many different types of firms that can provide services that are the same or similar to those provided by Little LEO operators as there were in the two-way mobile voice telephony CMRS marketplace in 1995. In fact, as discussed below, there may well be many more.

As the Notice correctly recognizes, there is no "market" for Little LEO service per se. Rather, the services provided by Little LEO systems include "commercial radio location and two-way data messaging services (CRL-TWDM) services anywhere in the world . . . , including emergency location services in remote areas, environmental data collection, vehicle tracking and monitoring, and [transmission of] time-sensitive business and personal data." 8/ There are a variety of potential substitutes for these services. Moreover, as the Notice recognizes, Big LEO systems, geostationary orbit fixed satellites (of which there are over 30 licensed in the US and many more licensed by other countries), geostationary orbit mobile satellite operators such as AMSC, and terrestrial service providers such as PCS carriers can supply many of the services included in the group termed "CRL-TWDM" by the Notice. 9/ Thus, the number of CRL-TWDM suppliers is substantial, and well within the number needed to find competition under the SCP model as applied in the cellular context. 10/

8/ Notice at para. 24.

9/ Id. at para. 27.

10/ While Little LEO systems may have certain advantages over other providers in offering some of these services, other systems have countervailing advantages. For example, the lower cost of Little LEO terminal devices may well be outweighed, for many consumers, by the limits on the range of services that Little LEO operators can provide. Competitors such as geostationary orbit mobile satellite operators and PCS providers can offer a far broader range of services, including paging and mobile voice telephony, than Little LEOs can. It is difficult to predict, in advance, exactly how the market for these overlapping, related services will develop -- although given the number of potential competitors, including Little LEO

[Footnote continued]

Again, however, none of this is relevant given that permitting Starsys to participate in the second round would not exclude licensing additional systems operating in the same spectrum, since Starsys does not seek exclusionary use of spectrum. For all of these reasons, it would be arbitrary and capricious, and contrary to the public interest, for the Commission to adopt rules in this proceeding that result in the retroactive dismissal of Starsys's long-pending application.

II. THE COMMISSION SHOULD ASSURE CURRENT APPLICANTS PRIORITY FOR SPECTRUM ALLOCATED AT WRC-95 AND WRC-97, AND DEFER DECISIONS WITH REGARD TO ASSIGNMENT OF FUTURE SPECTRUM.

Starsys agrees with the Commission that "second round Little LEO applicants were instrumental in the United States' successful effort at WRC-95 to obtain additional spectrum for the Little LEO service." ^{11/} It is equally true that most second round applicants have been working actively since WRC-95 to maximize the likelihood that additional spectrum will be allocated at WRC-97. ^{12/} Starsys in particular has taken a leading role in this regard. For example, WRC-95 resulted in a significant edict providing that no spectrum would be considered for

[Footnote continued]

licensees and the broad range of other providers of similar and substitutable services, vigorous competition can be assumed. See id. at para. 33.

^{11/} Notice at para. 78.

^{12/} As the Commission knows, Starsys also was instrumental in obtaining allocation of the first NVNG spectrum at WARC-92, as well as follow up WRC-related activity since then.

allocation to NGSO MSS < 1 GHz without consideration of preliminary sharing studies for the bands. This WRC also provided recommendations for sharing studies in several potential bands. Since then Starsys and several other second round applicants have been expending considerable resources to complete these sharing studies in preparation for WRC-97. Extensive work has gone on in U.S. WP 8D and ITU-R WP 8D in this regard. Among other activities, Starsys contributed the sharing studies for the 149.9-150.05 MHz band, and for radioastronomy sharing in the bands below 1 GHz. Other second round applicants have made their own contributions.

In these circumstances, the Commission has a clear obligation to give priority to the current applicants with respect to any spectrum allocated out of WRC-95 or WRC-97. This principle should be made crystal clear now, before the applicants undertake the significant additional work and expense that WRC-97 itself will require. Starsys submits that it would be patently unfair to permit free riding third parties access to the new spectrum after the second round parties have done the heavy lifting to support U.S. efforts to expand allocations. Indeed, Starsys is concerned that unless this matter is resolved promptly, incentives of the second round applicants to continue their supporting work for WRC-97 will be sharply reduced.

At this point the Commission should defer a decision as to when the next NVNG processing round will open and what rules will then apply. This matter can be better evaluated once the results of WRC-97 are known. Starsys is

hopeful that WRC-97 will result in sufficient allocations to permit the Commission to grant all of the qualified second round applications, including both new systems and expansion requirements for initial systems. If spectrum remains, the Commission may wish to open a third general round. Alternatively, the Commission may decide to preserve remaining spectrum for additional expansion needs of licensed systems pending further allocation of spectrum at later WRCs. These are matters better evaluated later when the Commission knows what additional spectrum actually will be available, and has the benefit of seeing NVNG operations develop in the marketplace. The Commission also will be able to evaluate the impact of any further coordination developments that might impact licensees.

In short, NVNG service presents unique facts and problems that justify special consideration of the applicants here. The NVNG applicants have been integrally involved in the allocation process at each step, yet they continue to suffer from a paucity of available spectrum. As long as this situation continues, and so long as the applicants are involved in the process of improving spectrum availability, they should be assured that they will benefit from their work to the extent necessary and possible to achieve viable systems and serve their customer bases as they grow.

III. THE COMMISSION'S SPECTRUM SHARING PROPOSALS MUST BE IMPLEMENTED WITH DUE CONSIDERATION TO THE CONSTRAINTS ALREADY FACED BY FIRST ROUND LICENSEES.

The Commission has proposed licensing second round applicants to operate in portions of the bands already licensed to Starsys, Orbcomm and VITA in the first round. Specifically, the Commission seeks comment on the viability of three proposed systems based on its conclusion that "there is sufficient spectrum available to grant a license for at least one, and possibly up to three new systems in the second processing round." Notice at ¶ 41. As demonstrated below, this conclusion is based on an unrealistic assessment of the amount of spectrum that would be available to a new licensee, particularly in the 137-138 MHz band occupied by Starsys, Orbcomm and the various meteorological satellites. If the Commission chooses to authorize additional licensees, it must ensure that any such systems do not have a harmful effect on existing licensees.

1. The Commission Should Recognize Spectrum Developments That Already Have Impacted First Round Systems.

In determining that additional licensees can be accommodated in the existing bands, the Commission places great reliance on the joint sharing plan developed by the Negotiated Rulemaking Committee. ^{13/} The Commission is correct that Starsys and the other first round licensees stated that additional

^{13/} Notice at ¶ 41, citing Below 1 GHz LEO Negotiated Rulemaking Committee, Report at 8-9 (September 16, 1992).

entrants could be accommodated under the sharing plan, but the *Notice* fails to acknowledge that significant changes have taken place since the original Negotiated Rulemaking. The effect of these changes is to reduce significantly the ability of existing licensees to share spectrum in these bands, particularly the 137-138 MHz band.

Since the 1992 Negotiated Rulemaking, there have been a number of unanticipated technical constraints placed on Starsys and other licensees. For example, the NVNG rules subsequently adopted dramatically affected the operation of spread-spectrum systems. Those rules reduced the power, duration and duty cycle of the mobile terminals in the uplink band well beyond what was anticipated at the time of the Negotiated Rulemaking. The effect of these very low power levels (approximately 2 watts per terminal) is a lower than desired link margin on the satellite downlink channel to the ground station. The duty cycle imposed on spread-spectrum systems is one half of that allowed FDMA systems in the same band.

In addition, the need to coordinate with NOAA in the 137-138 MHz band has further limited the output power of the satellites to levels that allow only a minimum link margin to the Starsys system. This low link margin for Starsys now requires that FDMA systems operating in channels close to the Starsys 137.5 MHz centerline frequency must lower their power at the satellite significantly when operating in main antenna beam of a Starsys ground station to avoid causing harmful interference.

Beyond these technical constraints, there also have been a number of unanticipated coordination problems that impact the availability of additional spectrum. For example, as a result of formal negotiations with France, Starsys already will have to share with another spread-spectrum worldwide system in the same band. The proposed sharing agreements with this additional system are based on each system agreeing to use similar power levels and similar coding schemes so as to cause an equitable sharing of the bands where both systems are using spread-spectrum techniques.

Coordination problems also have developed as a result of changes in Orbcomm's plans. The need to share spectrum with Orbcomm in the 137-138 MHz band was known at the time of the negotiated rulemaking, but was based on Orbcomm's existing proposal to deploy 20 satellites. When Orbcomm subsequently changed their proposal and announced plans to deploy a constellation of 36 satellites, the result was a nearly 80 percent increase in the time during which Orbcomm satellites would be seen in the main beam of a Starsys ground station tracking antenna.

Furthermore, at the time of the Negotiated Rulemaking, it was believed that the Orbcomm channels in the 137-138 MHz band could be accommodated at the outside edges of the co-primary mobile satellite frequency allocation, where those channels would impose minimum interference to Starsys. The retention of NOAA channels in the Little LEO co-primary area required moving some Orbcomm channels closer to the Starsys centerline, thereby causing

more interference than anticipated. Subsequent international coordination difficulties between Orbcomm and the Russian METEOR system caused additional displacement of Orbcomm channels closer to the Starsys centerline. The Commission's proposed movement of one additional Orbcomm channel to the NOAA channel directly on top of the Starsys centerline frequency, and one to a closely adjacent channel, will cause severe increases in harmful interference to the Starsys signal when operating in the same area simultaneously unless Orbcomm is required to make significant power reductions in these channels when operating in the main beam of a Starsys ground station antenna.

In sum, a significant power reduction in the Starsys downlink channel, and major increases in harmful interference to the Starsys signal, have occurred since the Negotiated Rulemaking, and are still occurring as a result of international coordination efforts. The net result of these power reductions and increases in interference is that significantly less sharing will be possible than anticipated at the time of the original Negotiated Rulemaking in 1992. As discussed below, this reduced sharing ability will be of particular concern in the 137-138 MHz band, where any second round licensees will periodically have to operate at reduced power levels to avoid causing harmful interference to Starsys.

2. Any New Systems That Are Licensed Must Protect Existing Licensees From Additional Interference.

In these comments, Starsys does not take a position on the specifics of the three systems proposed by the Commission in the *Notice*, or on whether some alternative proposal would be more efficient. However, Starsys does have certain

additional concerns related to those proposals as they impact the Starsys system itself.

a. Issues in the 137-138 MHz band.

The Commission notes that NOAA and Orbcomm have been coordinating use the 137-138 MHz band and that Orbcomm will have to migrate some of its operations to two of the NOAA channels, 137.485-137.515 MHz and 137.605 and 137.635 MHz. ^{14/} Starsys opposes the migration of Orbcomm to these NOAA channels and proposes instead that Orbcomm migrate to NOAA's other channels at 137.333-127-367 MHz and 137.753-137.787 MHz. Orbcomm and Starsys worked closely to insure that the Orbcomm system minimized its interference to the Starsys signal at 137.5 MHz. A significant factor in the sharing agreement between the two companies was that Orbcomm would attempt to locate its 25 kHz service link channels as far away from Starsys as possible to avoid causing major interference to the Starsys system. To facilitate the existing sharing agreement, it is important that any relocation of Orbcomm's channels be to locations at the maximum frequency effect possible from 137.5 MHz. By relocating Orbcomm to the more distant NOAA channels, it is recognized that other applicants may wish to use the two closest "NOAA channels" to the GE Starsys centerline. However, new licensees' systems will have the option to use two 15 kHz channels in

^{14/} Notice at para. 53.

each NOAA channel and could better accommodate lower power settings to minimize interference to the GE Starsys downlink.

If new systems are licensed in the 137-138 MHz band, it will be incumbent upon the licensee to conduct a sharing evaluation on the impact of transmissions on the Starsys system. This evaluation can be conducted using Draft New Recommendation ITU-R [8D/XQ], "Methodology for Evaluating Interference from Narrowband Mobile Satellite Networks to Spread-Spectrum Direct-Sequence Mobile Satellite Networks Operating with Space Stations in Low Earth Orbit at Frequencies below 1 GHz." This recommendation is contained in Document 8D/TEMP/72(Rev.1)-E, dated November 7, 1996, as approved at ITU-R WP 8D in Geneva.

In general, as the amount of offset of an FDMA channel from the Starsys centerline frequency decreases, the power of the satellite transmission must be reduced to avoid harmful interference when satellites from both systems are present in the main beam of a Starsys ground station antenna at the same time. Systems planning to operate multiple channels simultaneously in this band also will have to consider the impact on Starsys of the power from two or more simultaneously operating channels. In essence, additional licensees would have to share with Starsys using power reductions for operations in the 137-138 MHz band. If permitted, second round licensees may find that the benefit of maximum offset occurs by operating in the edges of the band, which will allow higher power levels,

as opposed to operating in the NOAA channels that are located closer to the Starsys centerline at 137.5 MHz.

Starsys has long anticipated that the NOAA meteorological satellites would move from the temporary channels in the center of the 137-138 MHz band to the wider bands at either end of the 137-138 MHz band. When this occurs, Starsys would be able to increase the power of its feeder downlink somewhat without exceeding the meteorological satellite criteria for interference in their channels. This would have a double benefit: (a) it would allow GE Starsys a more robust link budget, and (b) it would allow the FDMA Little LEO satellites sharing the band to transmit at higher levels when in the Starsys ground station main antenna beam. Therefore, Starsys supports the earliest movement of the NOAA satellite channels to the more offset "NOAA bands" at either side of the 137-138 MHz band.

b. Issues in the 149.9-150.05 MHz band.

The Commission has identified only 100 of the 150 kHz available to NGO MSS < 1 GHz in this band based on sharing the other 50 kHz with the French S80-1 system. However, we note that no S80-1 feeder links are anticipated in the United States. Furthermore, the anticipated use of this band by the French system is for feeder links only, and therefore it can be shared on a geographical basis. The restrictive nature of the sharing requirements for RNSS make this band much more amenable for stationary MSS systems such as feeder links than for mobile use. Accordingly, GE Starsys recommends that the entire 150 kHz be made available to